

PLANT DISEASE CONTROL NOTES

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IDENTIFICATION AND MANAGEMENT OF DISEASES OF INDOOR PLANTS

R. C. Lambe*

There are several different groups of plants that fit the general category of indoor plants. Included in this group are foliage plants, flowering plants, cacti, orchids, and ferns. In addition to being subject to attack by various insects and mites, indoor plants are also susceptible to infection by plant pathogenic fungi, bacteria, viruses, and nematodes. Abiotic or noninfectious diseases are important.

Frequently, improper culture or unfavorable environmental conditions predispose interior plants to infection by plant pathogenic agents. Improper cultural practices may include one or more of the following: too much water, too little water, too much light, insufficient light, low humidity, overhead watering and excess fertilization.

Diseases caused by plant pathogenic organisms can be divided into four major categories: (1) foliar and flower fungal, (2) foliar and stem bacterial, (3) soil-borne root and stem fungal, and (4) insect or cutting transmitted viral diseases.

DISEASE MANAGEMENT

The majority of indoor plants sold in Virginia retail stores which include foliage and flowering plants such as gloxinias, African violets, chrysanthemums, begonias and fuchsias are growing in a sub-tropical environment that promotes rapid plant growth. Unfortunately, the sub-tropical environment is not only optimum for plant growth but is ideal for plant disease development. In order to avoid diseases of indoor plants, it is essential that plants be inspected carefully before purchase for freedom from disease.

PREVENTION OF ROOT ROT

Plants with dark-green older leaves and new shoots are usually free of root and stem diseases. If plants are suspected of suffering from root rot, they should be gently knocked from the container and examined. A healthy root system will appear fibrous with white root tips whereas a diseased root system will show blackened root tips with various degrees of soft watery rot. It may be necessary to separate the plant from the growing medium in order to examine the inner roots and the stem for evidence of discoloration.

Because most soils contain pathogens like Pythium, Phytophthora, Rhizoctonia and Thielaviopsis it is important that soil be steam pasteurized or chemically fumigated before using. Containers that are placed on the ground can become contaminated with soil-borne fungi that wash or splash into the growing medium. Before re-using clay or plastic pots, they should be thoroughly washed and

*Extension Specialist, Plant Pathology, Department of Plant Pathology and Physiology, VPI & SU, Blacksburg, VA 24061

sterilized by boiling them in water or washing and rinsing in a solution of household bleach and water. A satisfactory solution contains one part bleach in nine parts of water.

Growing in a soilless medium does not guarantee freedom from disease if pathogens are introduced and water does not pass through the container quickly. Excessive water results in oxygen deficiency in the medium, predisposing roots to infection by *Phytophthora* and *Pythium*.

PREVENTION OF FUNGUS LEAF SPOTS

Because fungi require free water on the leaves for infection, it is very important that the foliage be kept as dry as possible. Syringing the leaves should be done carefully, especially if fungus leaf spots are apparent. If the leaf spot infection is limited to a few leaves, the diseased leaves should be picked off and removed from the vicinity of the plant. It is important the indoor plants are not crowded so closely together that they remain wet. Foliage that is excessively dense, should be lightly thinned. Separate diseased plants from healthy ones to avoid spread of infection. Refer to Pest Management Guide 25.

PREVENTION OF BACTERIAL DISEASES

There are numerous bacterial leaf spots and stem rots caused by plant pathogenic bacteria. Bacterial spots differ from those caused by fungi in that they typically have a pale green to yellow "halo" around the outer margin of the spot and they appear as dark green, water-soaked spots. Bacterial petiole or leaf rot that typically occurs in *Philodendron selloum*, appear as soft watery rots. Occasionally, large stems are affected by bacterial disease organisms. These stems will appear soft and watery and occasionally turn dark black.

The bacteria are readily spread by splashing water, pruning tools, and infected plants. For this reason, diseased plants should be grown as dry as possible without going through excessive wilt. Water should not be applied over the top of the plant. Pruning shears should be sterilized in a dilute household bleach in water solution (one part household bleach in nine parts water) between each cut.

PREVENTION OF VIRUS DISEASES

Flowering indoor plants, foliage plants, and orchids are susceptible to infection by plant viruses. Symptoms of virus infection appear as circular spots or rings, light green to yellow in color, with a diffuse mottled pattern (mosaic) of light and dark green areas. Leaves on infected plants are frequently yellow and the plants themselves stunted with fewer than normal flowers.

There are no chemical controls recommended for virus infected plants. Only healthy plants should be selected for cuttings or seed production. Avoid using knives or pruning shears to trim infected plants prior to cutting healthy ones. Control insect vectors of viruses.

ABIOTIC DISEASES (No living plant pathogen)

Nutrient Deficiency

Indoor plants that have light pale-green or yellow leaves may be suffering from lack of nitrogen or a nutrient deficiency. If the leaves are turning brown along the margins, the plant may be showing a deficiency of potash. Phosphorus may be deficient if the leaves turn excessively dark green or a dull green or bluish-green.

Excessively Hot or Dry Air

This problem is most severe during winter months when the humidity in buildings drops due to heating and reduced atmospheric humidity. Ferns and tender-leafed plants are especially sensitive to low humidity. Plants requiring humidity will survive if grown on wet gravel or sand. Avoid placing plants on or near radiators, heat ducts, or vents.

Insufficient Light

Plants with pale-yellow smaller-than-normal leaves and generally low in vigor may need more light. Loss of dark coloration is indicative of low light. It is important to know the particular light requirements for each specific plant.

Accumulated Salts

Pots used for growing plants for long periods of time may have a white or yellow crust on the container soil or media surface. This residue signifies an accumulation of unused salts from previous fertilization or "hard water". If the salt accumulation reaches toxic levels, plant injury occurs with marginal leaf burn and root destruction.

A monthly leaching to leach excess salt through the bottom of the pot through the drainage holes is beneficial. The soil can be leached readily if the growing medium is porous. When salts accumulate, the pot should be completely immersed in fresh water, thoroughly saturating the soil. After air bubbles cease to rise from the container, remove it and allow to drain. This procedure should be repeated at least twice, or until the water draining out of the pot holes appears clear.

Water from some water de-salting systems may contain high amounts of calcium. Distilled water, rain water, or water from dehumidifying machines is usually saltfree.

Sudden Change in Environment

If the leaves drop suddenly from a plant, look into the possibility of a rapid change in temperature, cold or hot drafts of dry air, or changing from sunny to dark locations.

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